Trend Study 30-61-03

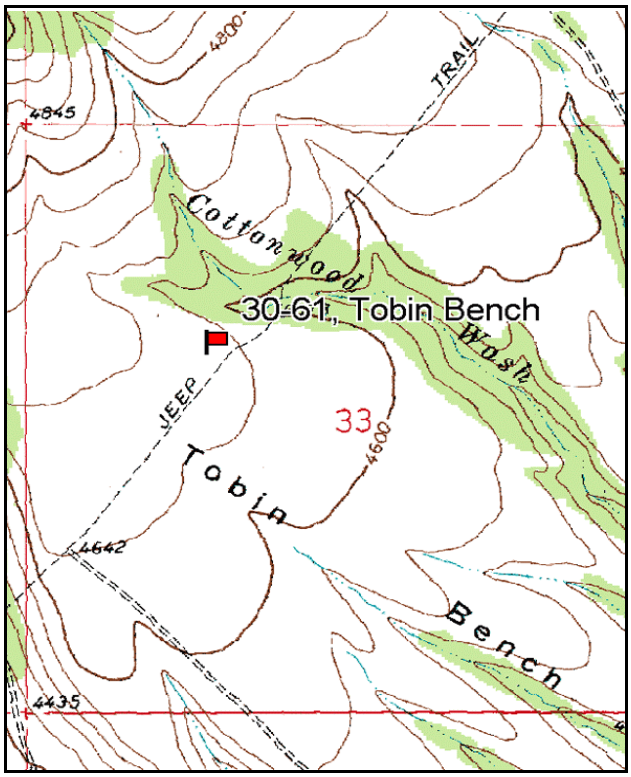
Study site name: Tobin Bench . Vegetation type: Cliffrose-sagebrush.

Compass bearing: frequency baseline 306 degrees magnetic.

Frequency belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft).

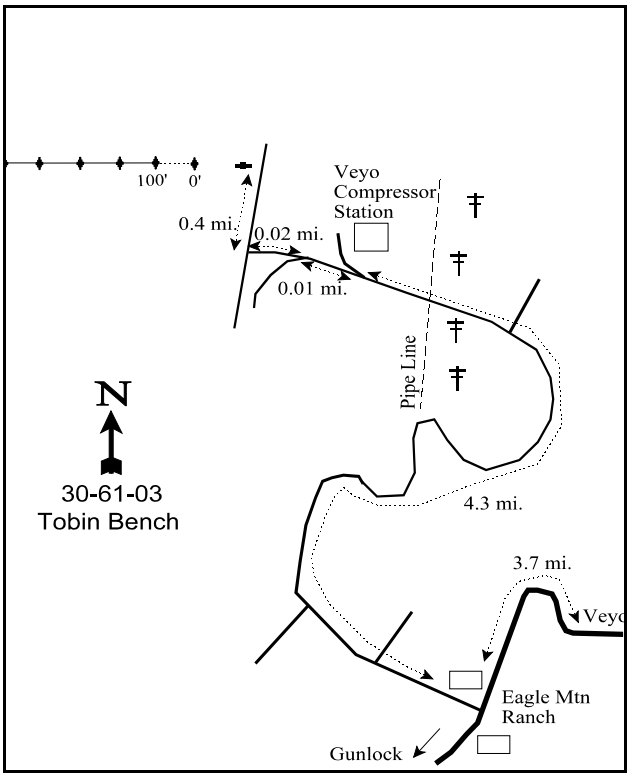
LOCATION DESCRIPTION

From Veyo, drive west on Center St. for 3.7 miles to a road on the right (north) side of the road. The Eagle Mountain Ranch will be on the left side of the road at this turn. Drive on this oiled road for 4.3 miles to Veyo Compressor Station and a fork in the road. Take the left fork for 0.01 miles to another fork. Stay right and drive 0.02 miles to an intersection and a wire gate. Turn right and drive 0.4 miles on an old powerline road to the witness post on the left side of the road. The 0-foot stake is 7 paces at 306 degrees magnetic from the witness post. The baseline runs approximately west. The study is marked by green steel "T" fence posts approximately 12 to 14 inches in height.



Map Name: Gunlock

Township 39S , Range 17W , Section 33



Diagrammatic Sketch

GPS: NAD 27, UTM 12S 4137526 N, 255178 E

DISCUSSION

Tobin Bench - Trend Study No. 30-61

This is a new trend study established in 2003. It samples a cliffrose/sagebrush winter range near the blackbrush ecotone. The transect is located west of the town of Veyo, and about 1.5 miles east of the Grapevine Spring trend study. The area has a gentle slope (3%) and an east aspect. Elevation is about 4,650 feet. This area receives heavy winter deer use and experienced severe sagebrush die-off in 2003 due to drought. Pellet group data from 2003 estimated heavy deer use at 225 deer days use/acre (555 ddu/ha). The local DWR biologist estimates that 1,000 deer routinely use this area from October through March.

Soil at the site is deep with an effective rooting depth estimated at a little over 17 inches. Texture is a sandy clay loam, and reactivity is neutral (pH of 7.1). There is some rock and pavement on the surface and abundant litter mostly from dead sagebrush plants. Rock on the soil surface is dark colored basalt which causes elevated surface temperatures. Soil temperature is also high averaging 72.8°F at a depth of almost 17 inches. High soil and surface temperatures can hinder shrub seedling establishment. Bare ground is found in the shrub interspaces with soil pedestalling around shrubs. There are some signs of erosion on the site but it is limited by the gentle terrain. The soil erosion condition class was determined as stable in 2003.

Prior to study site establishment on May 27th of 2003, this area supported a moderately dense stand of low elevation mountain big sagebrush possibly hybridized with Wyoming big sagebrush. Intermixed with the sagebrush is a population of about 500 moderately tall Stansbury cliffrose plants/acre. This area has experienced severe drought for the past few years. Precipitation data from the town of Veyo show that 3 of the past 4 years have been well below normal for annual precipitation, especially 2002, which was only 37% of normal. In addition, spring precipitation (April to June) has been drier than normal for the past 4 years (see precipitation graphs in unit summary). The spring of 2002 was exceptionally dry at only 5% of normal. This dry period has caused a major sagebrush die-off on Tobin Bench. Shrub density data estimate 4,340 dead sagebrush plants/acre with another 600 plants/acre of decadent plants. Of the 600 decadent plants/acre estimated, 77% of those were classified as dying, meaning that over 50% of the crown was dead. Only about 20 plants/acre are mature plants with normal vigor. Utilization of the surviving plants was moderate to heavy. There were no seedlings or young encountered. Due to the proximity of this site to the black brush ecotype less that ½ mile to the south, this area is probably marginal for mountain big sagebrush and the drier than average conditions of the past few years have caused the sagebrush die-off.

The cliffrose population appears healthy and vigorous. Mature plants average nearly 5 feet in height making some plants partly unavailable to browsing. Utilization is heavy on available portions. Annual leader growth is good averaging 2½ inches. Vigor is normal on most plants but half of the population was classified as decadent. Reproduction is minimal but cliffrose is long-lived and young recruitment will improve with a return to normal precipitation patterns. The only other shrubs on the site consist of some oakbrush and three species of cactus.

The herbaceous understory is very poor. Perennial grasses are rare and represented by a few intermediate wheatgrass and bottlebrush squirreltail plants. Forbs are somewhat more abundant but only four species were encountered. Euphorbia and sego lily are the only common species. Total grass and forb cover averaged less than 4% in 2003.

2003 APPARENT TREND ASSESSMENT

Soil conditions are currently poor with abundant bare ground exposed. Most of the litter cover is due to dead sagebrush. However, due to the gentle terrain, erosion is not a problem on this site. Sagebrush has declined

substantially with 4,340 dead plants/acre estimated. There are very few sagebrush that will survive. The cliffrose population numbers about 500 plants/acre. Most display normal vigor but 52% were classified as decadent. Utilization is heavy on available plants but the cliffrose are vigorous and have good annual leader growth. With the loss of sagebrush on this site, cliffrose will likely be more heavily hedged in coming years which could eventually have a detrimental effect. It will be important to try to get cliffrose to a more balanced age class distribution. The herbaceous understory is very poor. Perennial grasses are rare and only Euphorbia and sego lily are found more than occasionally. There is not much that can be done to improve the understory without seeding.

HERBACEOUS TRENDS --
Management unit 30 , Study no: 61

Type	Species	Nested Frequency '03	Average Cover % '03
G	Agropyron intermedium	2	.03
G	Sitanion hystrix	7	.01
Total for Annual Grasses		0	0
Total for Perennial Grasses		9	0.04
Total for Grasses		9	0.04
F	Aster spp.	1	.00
F	Calochortus nuttallii	37	.37
F	Euphorbia spp.	46	2.89
F	Navarretia intertexta (a)	2	.03
Total for Annual Forbs		2	0.03
Total for Perennial Forbs		84	3.27
Total for Forbs		86	3.30

BROWSE TRENDS --
Management unit 30 , Study no: 61

Type	Species	Strip Frequency '03	Average Cover % '03
B	Artemisia tridentata vaseyana	24	6.11
B	Cowania mexicana stansburiana	25	7.29
B	Quercus turbinella	2	.53
Total for Browse		51	13.94

CANOPY COVER, LINE INTERCEPT --
Management unit 30 , Study no: 61

Species	Percent Cover '03
Artemisia tridentata vaseyana	.93
Cowania mexicana stansburiana	7.88
Quercus turbinella	1.36

KEY BROWSE ANNUAL LEADER GROWTH --
Management unit 30 , Study no: 61

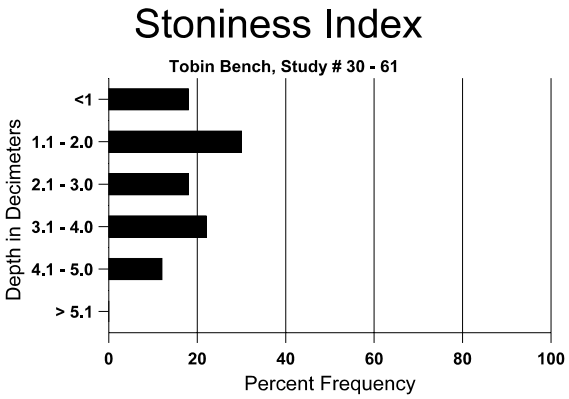
Species	Average leader growth (in) '03
Cowania mexicana stansburiana	2.5

BASIC COVER --
Management unit 30 , Study no: 61

Cover Type	Average Cover % '03
Vegetation	17.18
Rock	7.96
Pavement	9.61
Litter	50.40
Cryptogams	.09
Bare Ground	23.35

SOIL ANALYSIS DATA --
Management unit 30, Study no: 61, Study Name: Tobin Bench

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	ds/m
17.2	72.8 (16.6)	7.1	58.6	14.7	26.7	1.3	10.3	486.4	0.6



PELLET GROUP DATA --
Management unit 30 , Study no: 61

Type	Quadrat Frequency '03	Days use per acre (ha) '03
Rabbit	7	-
Deer	50	225 (555)

BROWSE CHARACTERISTICS --
Management unit 30 , Study no: 61

		Age class distribution (plants per acre)					Utilization				
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
Artemisia tridentata vaseyana											
03	**620**	-	-	20	600	4340	32	16	97	74	31/41
Cowania mexicana stansburiana											
03	**500**	20	20	220	260	20	24	48	52	8	57/67
Coryphantha vivipara											
03	**0**	-	-	-	-	-	0	0	-	0	6/5
Ephedra viridis											
03	**0**	-	-	-	-	-	0	0	-	0	30/34
Opuntia spp.											
03	**0**	-	-	-	-	-	0	0	-	0	13/26
Quercus turbinella											
03	**240**	-	-	240	-	40	0	0	-	0	52/44
Sclerocactus											
03	**0**	-	-	-	-	-	0	0	-	0	11/11